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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/347,560	07/06/1999	JOHN ERIK HERSHEY	RD-24.997	4031

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GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH CENTER
PATENT DOCKET RM. 4A59
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EXAMINER

LIU, SHUWANG

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 08/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/347,560

Applicant(s)

HERSHEY ET AL.

Examiner

Shuwang Liu

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Prosecution Application

1. The request filed on 06/06/03 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/347,560 is acceptable and a CPA has been established. An action on the CPA follows.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 6 and 10 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hershey et al. (US 5,844,949) in view of Braun et al. (US 4,799,238).

As shown in figures 1-3, Hershey et al. discloses a spread spectrum communication system which is a Geometric Harmonic Harmonic Modulation (GHM)

Art Unit: 2634

system over a power line (column 3, lines 11-27). The system comprises a differential encoder and decoder (column 2, lines 38-60 and column 4, lines 31- 44), wherein the system (including encoder and decoder), at least, facilitates identification of transmission errors resulting from a time varying function due to transmission through distribution transformer (column 1, lines 22-41).

Although Hershey et al. discloses the differential encoder and decoder, they do not teach the encoder or decoder in detail, that is, Hershey et al. does not disclose the encoder comprising an exclusive "or" logic unit, a one bit delay unit and said encoded digital baseband signal coupled to a modulator.

Braun et al., in the same field of endeavor, teaches:

(1) regarding claims 1 and 6:

an exclusive "or" logic unit (2 in figure 5A) having a first input for receiving the digital baseband signal (1);

a one bit delay unit (4) having an input coupled to the output of said exclusive "or" logic unit, said one bit delay unit having an output coupled to a second input of said exclusive "or" logic unit;

the output (3) of said exclusive "or" logic unit providing an encoded digital baseband signal (d_k);

said encoded digital baseband signal coupled to a modulator (11) so as to modulate spread spectrum carrier signal (column 4, lines 4-46 and column 5, lines 35-40).

(2) regarding claim 7:

Art Unit: 2634

further comprising the step of utilizing the encoded digital baseband output to modulate a spread spectrum carrier signal (column 5, lines 35-40).

(3) regarding claim 8:

wherein the output of said "or" unit is delayed for one bit period (column 1, lines 65-68).

One skilled in the art would have clearly recognized that the DPSK is a conventional method used in the GHM system whereby the GHM carrier is inverted or not inverted during a bit duration interval according to the binary state of the data so as the GHM receiver need not correct for frequency selective phase rotation. It would be desirable to have a GHM system with less sensitive to phase distortion introduced by non-linear transformers and resulting in a less complex system by selecting DPSK in the GHM system (column 4, lines 40-43, Hershey et al.). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate DPSK coding scheme of Braun et al. in the GHM system in order to allow the receiver need not correct for frequency selective phase rotation. In so doing, the GHM system is less sensitive to phase distortion introduced by non-linear transformers and resulting in a less complex system.

5. Claims 3-5 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hershey et al. (US 5,844,949) in view of Le Roy (US 5,822,363).

As shown in figures 1-3, Hershey et al. discloses a spread spectrum communication system which is a Geometric Harmonic Harmonic Modulation (GHM)

system over a power line (column 3, lines 11-27). The system comprises a differential encoder and decoder (column 2, lines 38-60 and column 4, lines 31- 44), wherein the system (including encoder and decoder), at least, facilitates identification of transmission errors resulting from a time varying function due to transmission through distribution transformer (column 1, lines 22-41). Furthermore, Hershey et al. discloses the input of the decoder (33 in figure 3) coupled to the output geometric harmonic modulation Fourier transform unit.

Although Hershey et al. discloses the differential encoder and decoder, they do not teach the encoder or decoder in detail, that is, Hershey et al. does not disclose the decoder comprising a one bit delay unit, a multiplier, a summer and a logic level as recited in claims 3, 4 and 10.

Le Roy , in the same field of endeavor, teaches:

(1) regarding claims 3 and 10:

a one bit delay unit (22) having an input coupled to a filter (20) (column 2, lines 19-23 and lines 58-64);

a multiplier (24) having a first input coupled to the output of the filter, and a second input coupled to the output of said one bit delay unit;

a summer (26) coupled to the output of said multiplier (24);

a logic level (28) determiner coupled to the output of said multiplier said logic level determiner to provide a decoded digital baseband signal.

(2) regarding claim 4:

an encoder having:

Art Unit: 2634

an exclusive "or" logic unit (12) having a first input for receiving said digital baseband signal (b_k);

a one bit delay unit (14) having an input coupled to the output of said exclusive "or" logic unit, said one bit delay unit having an output coupled to a second input of said exclusive "or" logic unit;

the output of said exclusive "or" logic unit providing an encoded digital baseband signal (d_k);

said encoded digital baseband signal coupled to a modulator (18) so as to modulate spread spectrum carrier signal (column 2, line 53-column 6, line 21 and column 7, lines 30-59).

a decoder having:

a one bit delay unit (22) having an input coupled to a filter (20);

a multiplier (24) having a first input coupled to the output of the filter, and a second input coupled to the output of said one bit delay unit;

a summer (26) coupled to the output of said multiplier (24);

a logic level (28) determiner coupled to the output of said multiplier said logic level determiner to provide a decoded digital baseband signal.

One skilled in the art would have clearly recognized that the DPSK is a conventional method used in the GHM system whereby the GHM carrier is inverted or not inverted during a bit duration interval according to the binary state of the data so as the GHM receiver need not correct for frequency selective phase rotation. It would be desirable to have a GHM system with less sensitive to phase distortion introduced by

Art Unit: 2634

non-linear transformers and resulting in a less complex system by selecting DPSK in the GHM system (column 4, lines 40-43, Hershey et al.). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate DPSK coding and decoding schemes of La Roy in the GHM system in order to allow the receiver need not correct for frequency selective phase rotation. In so doing, the GHM system is less sensitive to phase distortion introduced by non-linear transformers and resulting in a less complex system.

(4) regarding claims 5 and 9:

wherein the modulated spread spectrum carrier is coupled a power line (column 1, lines 5-8).

(5) regarding claim 11:

It is inherent in the DPSK encoder that the logic circuit 28 is declaring a logical zero when said product is greater than or equal to zero, and otherwise declaring a logical one.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shuwang Liu whose telephone number is (703) 308-9556.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin, can be reached at (703) 305-4714.

Any response to this action should be mailed to:

Art Unit: 2634

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



Shuwang Liu
Primary Examiner
Art Unit 2634

August 13, 2003